APPENDIX B

PROTOTYPE GUIDE TO CONSTRUCTION DUST CONTROL IN MARICOPA COUNTY

NOTE: This is a prototype product provided for illustration purposes only. This product is not intended to be used for actual dust control training. The content of this product was current at the time that the draft was created. However, subsequent changes in rules, regulations, and available data may have rendered portions of the text or graphics obsolete or inaccurate. If and when the training program recommended by this research project is implemented, updated training materials may be obtained from the program coordinator.

Guide to Construction Dust Control Measures

in Maricopa County, Arizona

DUST CONTROL BY THE CONSTRUCTION INDUSTRY

Blue Skies CAMPAIGN

ARIZONA

Prepared for
Arizona Transportation Research Center

LIMA & ASSOCIATES
Transportation - G.I.S.

Cathy D. Arthur

Guide to Construction Dust Control Measures
In Maricopa County, Arizona

DRAFT

Prepared for

The Arizona Department of Transportation

ADOT Project SPR-519
PM_{10} Research for Developing Educational Tools and Outreach Programs

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The intent of this guide is to provide information on how to implement effective dust control practices. It is based on the best information currently available; later publications may be issued to update this document.

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CHAPTER 1. INTRODUCTION

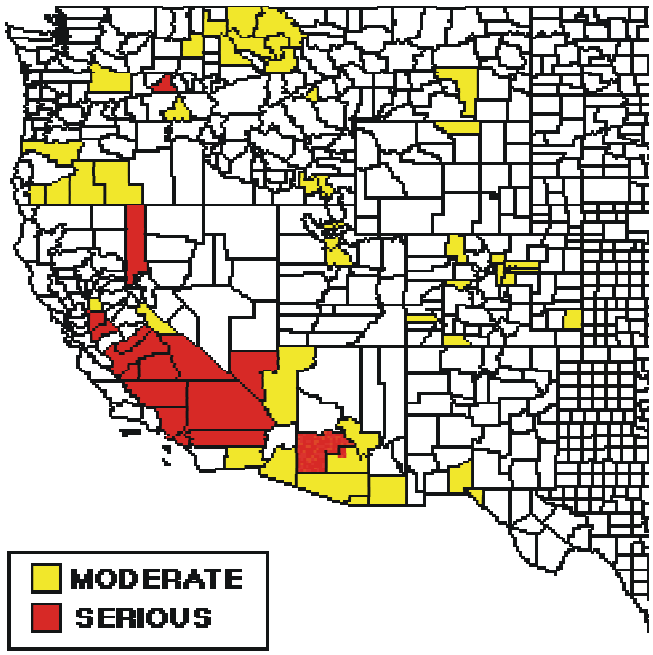
WHY THIS GUIDE IS NEEDED

This chapter summarizes the reasons for dust control and the dust control regulations that have been enacted. Subsequent chapters explain how PM_{10} is created and measured and describe dust control measures in detail. The Blue Skies Training and Certification Program is introduced, and examples of an earthmoving permit application and a sample daily recordkeeping log are provided.

The Federal Clean Air Act requires that emissions from all significant sources in areas not meeting the national ambient air quality standards be controlled through effective programs. Part of Maricopa County is classified as a serious nonattainment area because it does not meet the federal standards for particulate matter (PM_{10}). In February 2000, the Maricopa Association of Governments (MAG) submitted an air quality plan to the U. S. Environmental Protection Agency (EPA) that identified construction activities as a major source of PM_{10} in the Maricopa County nonattainment area.

PM_{10} is particulate matter that is 10 micrometers or less in diameter, about one-seventh the size of a human hair. These particles are very small and can invade the natural defense mechanism of the human respiratory tract penetrating deep into the lungs. Consequently, PM_{10} can cause a wide variety of harmful health effects, especially for children, the elderly, and people with pre-existing respiratory or cardiovascular disease.

With this potential threat to human health, several groups in the Phoenix metropolitan area are implementing programs to help the area meet the Federal Clean Air Act standards for PM_{10}.



PM_{10} Nonattainment Areas in the Western U.S.
—Source: U. S. EPA data

The intent of this guide is to:

- Provide construction industry management and labor with information and guidance for effectively implementing dust control measures.
- Inform the public about the efforts being made by the construction industry to improve air quality in the Phoenix metropolitan area.

WHY DUST CONTROL RULES WERE CREATED

The Phoenix metropolitan area has not met the Federal standards for PM_{10} since the Clean Air Act was revised in 1990. The particulate plan approved by EPA on July 25, 2002, shows that Maricopa County will attain the PM_{10} standards by December 31, 2006. The control measure in the plan most effective in reducing PM_{10} by 2006 is the strengthening and increased enforcement of Maricopa County's Fugitive Dust Control Rule 310.

WHO MUST COMPLY WITH THE DUST CONTROL RULES

Construction activities disturbing the soil within Maricopa County are regulated by the Maricopa County Environmental Services Department. Although Rule 310 requires the minimizing of emissions from all soil disturbing activities—earthmoving activities on one-tenth of an acre or more require a county permit.

A valid permit must be obtained before the soil is disturbed. If the project continues for more than one year, the permit must be renewed.

WHAT A CONTRACTOR MUST DO

The property owner, lessee, developer, or general/prime contractor who engages in earthmoving operations that disturb a total surface area of one-tenth acre (4,356 square feet) is responsible for meeting all of the legal requirements outlined below.

Formulate a Dust Control Plan

Obtain an Earthmoving Permit and have a Dust Control Plan approved by Maricopa County. Instructions for filling out an earthmoving permit application are provided in Chapter 5 of this Guide. The Dust Control Plan must ensure compliance with Rule 310, which prohibits visible emissions from exceeding 20 percent opacity anywhere on site. *A copy of the approved Dust Control Plan must be*

onsite at all times. This Dust Control Plan must contain, at a minimum, all of the following information:

- Name, address, and phone number of the person(s) responsible for the dust generating operation and for the submittal and implementation of the Dust Control Plan.

- A drawing, 8½" x 11" or larger, showing:
  - ✓ Site boundaries of the entire project.
  - ✓ Acres to be disturbed, including linear dimensions.
  - ✓ Locations of the nearest public roads.
  - ✓ Planned exit locations onto paved public roadways.

- Control measures to be applied to all actual and potential fugitive dust sources, before, during and after conducting any dust generating operation, including nonwork hours and nonwork days.

- Dust suppressants to be applied, including the following information:
  - ✓ Product specifications, including the Material Safety Data Sheet.
  - ✓ Label instructions including recommended method, frequency, and intensity of application.
  - ✓ Type, number, and capacity of application equipment.
  - ✓ Information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application.

- Specific surface treatment(s) and/or control measures utilized to control material trackout and sedimentation where unpaved and/or access points join paved public roadways.

- A contingency plan consisting of at least one contingency measure for each activity occurring on the site in case the primary control measures prove inadequate.

Implement the Dust Control Plan

The control measures in a Dust Control Plan must be implemented during all phases of construction. They are not effective when used after a dust problem arises. If the plan is not implemented consistently, poor working conditions begin to escalate. Equally important is that prevention measures be in place when the site is temporarily inactive.

Arizona's dry climate does not make excessive airborne dust inevitable. Not all arid regions have poor air quality from particulate matter. In Maricopa County, excess particulate matter is generated from human disturbance of the desert soil and the lack of stabilization during and after construction. Good dust control measures prevent soil erosion and fugitive dust emissions. Proper planning and use of control measures before, during, and after construction, minimizes fugitive dust emissions and protects public health in the surrounding community. Once the permit is issued, the person responsible for implementing the Dust Control Plan and the person(s) responsible for the dust generating operations on a site must maintain dust control measures at all times.

Each job site must have its own permit and plan. All those who will be working on the site must fully understand the responsibilities in the Dust Control Plan. The permit and Dust Control Plan must be available at the job site. Subcontractors should ask for a copy of the Dust Control Plan and Earthmoving Permit before starting to work.

Keep a Log

A daily log must be kept. This log is used to monitor the application, implementation, and effectiveness of control measures. A sample format for this daily log is included in chapter 6 of this guide. Notes on the effectiveness of dust control strategies used should be made.

WHAT HAPPENS IF A CONTRACTOR DOES NOT COMPLY

Any person who violates any Maricopa County air pollution rule or any permit condition (including a Dust Control Plan incorporated into a permit) may be subject to an order of abatement, a civil action for injunctive relief or civil penalties, or may be found guilty of a Class 1 Misdemeanor. Maricopa County Rules consider the property owner, lessee, developer, or general/prime contractor to be the parties responsible for acquiring Earthmoving Permits and Dust Control Plans. Thus, if the general contractor fails to comply, the developer may also be held responsible for the violation.

Uncovered loads of earth will create dust during hauling.
—Maricopa Small Business Environmental Assistance Program photo

The county's mission is to protect and improve the quality of life through responsive and effective environmental management. The county achieves consistent enforcement of air quality laws and regulations using the following process:

- A Notice of Violation (NOV) is issued, when the County discovers that a person, business, corporation, or enterprise fails to comply with provisions of Federal, State, or Maricopa County air quality laws and regulations.

- An Order of Abatement is issued following the issuance of an NOV when compliance is not attained within a reasonable amount of time.

Trackout from construction sites onto adjacent paved roadways is a significant source of fugitive dust.

—Maricopa Small Business Environmental Assistance Program photos

Additional enforcement action may be initiated when documented evidence reveals that any of the following conditions have occurred:

- The violation results in actual harm or a potential for harm to public health or the environment.
- The violation constitutes a knowing or willful violation of air quality control laws and regulations.
- The violation involves a major deviation from an air quality standard or requirement.
- Repeat violations occur after receiving a Notice of Violation.

The additional enforcement actions that may be taken include:

- Filing a Class I Misdemeanor Criminal Complaint (Citation) pursuant to Arizona Revised Statutes (A.R.S.) 49-502 in Justice Court.
- Filing a Civil Complaint in Superior Court.
- Filing an action for violations, which are classified as a Class I Misdemeanor, Class 2 Felony, Class 5 Felony, or Class 6 Felony.
- Filing an action for Injunctive Relief.

The County uses the "Maricopa County Air Pollution Control Penalty Policy" to determine appropriate penalties for resolving both Criminal and Civil Complaints. These penalties range from $2,500 to $10,000 per day per violation, depending on the severity and circumstance of the violation.

2. HOW PM_{10} IS CREATED AND MEASURED

WHAT IS PM_{10}?

Particulate matter is finely divided solid or liquid material smaller than 10 micrometers (µm) in diameter. These particles are commonly referred to as dust or fugitive dust.

Particulate matter can be comprised of solid or liquid substances that are either visible or invisible. These particles vary in shape and size, ranging from large drops of liquid to microscopic dust particles to tobacco smoke to aerosols. The particles affect visibility and can be transported for long distances by winds. These particles are small enough to be dangerous to human health because they can pass through nostril hairs and enter the lungs. The smaller the particle, the deeper it can penetrate into the lungs and become lodged and not easily, if ever, expelled.

The potential for soil to release dust into the atmosphere depends largely on the soil particle, its size, and the condition of the soil surface. Particles capable of being suspended in the atmosphere exist in most natural soils, although particles in the PM_{10} size range are often bonded tightly to other particles, making large aggregates. Increased wind speed and/or traffic over the soil surface will break the aggregates into smaller sized particles, enabling the particles to be ejected into the atmosphere as fugitive dust. PM_{10} can be suspended, while particles greater than 80 µm rarely stay in suspension because they are too heavy.

Soils have four main constituents: mineral matter, organic matter, air, and water. Minerals are the major constituent in Arizona soils and are derived from the parent material by weathering. Organic matter is derived mostly from decaying plant material that is broken down and decomposed by animals and microorganisms living in the soil. Arizona soils generally contain relatively small amounts of organic matter due to limited plant growth and rapid decomposition of dead plant matter. Air and water fill the pore spaces found between the mineral and organic matter in soils.

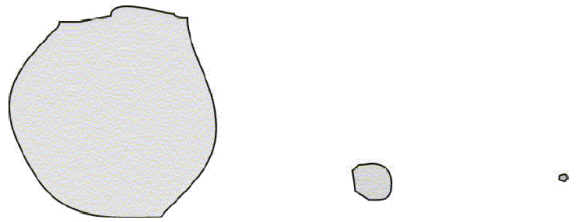
Mineral particles range in size from 2,000 µm to less than 2 µm and are the bases upon which soil texture is determined. Soil mineral particles can be classified as sand (2000 to 50 µm), silt (50 to 2 µm) or clay (less than 2 µm). The relative sizes of soil minerals are depicted in figure 1.

The textural class of a soil is determined by estimating the particle size distribution in the field by the "feel method" or analytically through laboratory measurement. Once the percentages of soil particles are decided, the soil textural triangle (see figure 2) is used to classify the soil further. Interestingly, field determinations are commonly within three percent of laboratory derived values. Local soil surveys made available by the Natural Resources Conservation Service contain these textural classes.

PM_{10} originating from soil is composed of clay particles and large silt particles. Soils with high amounts of these particles have a strong potential to generate PM_{10}. High clay soils always have the potential to generate PM_{10} under the right conditions. The quantity of PM_{10} that is actually generated is closely linked to the management of those soils or the amount of mechanical disturbance. Soil disturbance changes soil structure. Soil structure is an important physical characteristic of any soil. It is produced by the aggregation of particles of sand, silt, and clay into larger units called "peds." A soil with a large amount of clay particles may generate low levels of PM_{10} if disturbance is limited or soil moisture levels are elevated. However, a soil with low clay and silt contents could generate high levels of PM_{10} if frequently disturbed under dry conditions by traffic or earthmoving equipment.

When the natural soil structure is manipulated or disturbed by earthmoving, animals, weathering or vehicular traffic, the structure can be destroyed, which allows particles less

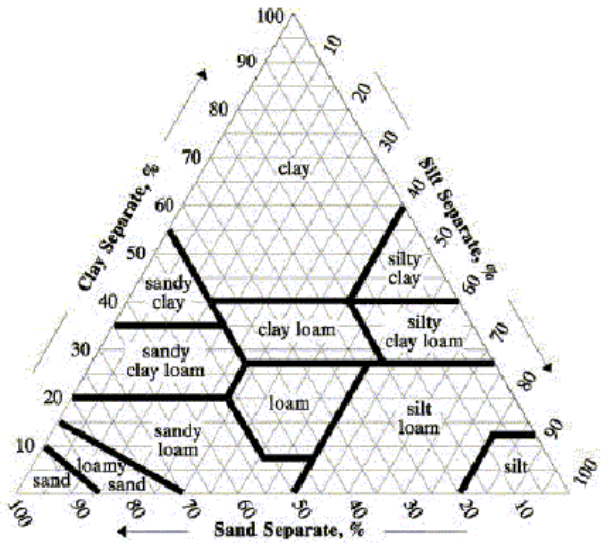
Figure 1. Relative Sizes of Soil Minerals



Sand	Silt	Clay
(2000 - 50 µm)	(50 - 2 µm)	<2 µm

Source: Governor's Agricultural BMP Committee, *Guide to Agricultural PM_{10} Best Management Practices*, 2001

Figure 2. Soil Textural Triangle



Source: Governor's Agricultural BMP Committee, *Guide to Agricultural PM_{10} Best Management Practices*, 2001

than 10 µm in size to be suspended in the air easily. As soil aggregates break away from larger aggregates and become smaller, their ability to be suspended in the air increases significantly. Increased traffic or soil surface manipulation increases the potential for those smaller particles to become fugitive dust. Clay content, relative humidity, soil moisture, wind speed and direction, as well as other elements, can affect the bonding strength between particles, which, in effect, determines the amount of PM_{10} generated.

A soil texture map that depicts the approximate locations of various soil texture types in the in the Maricopa County PM_{10} nonattainment area can be found on the Blue Skies Web site at www.azblueskies.org/soils.html. The map illustrates the relationship between soil types and their contribution to the formation of PM_{10} air pollution.

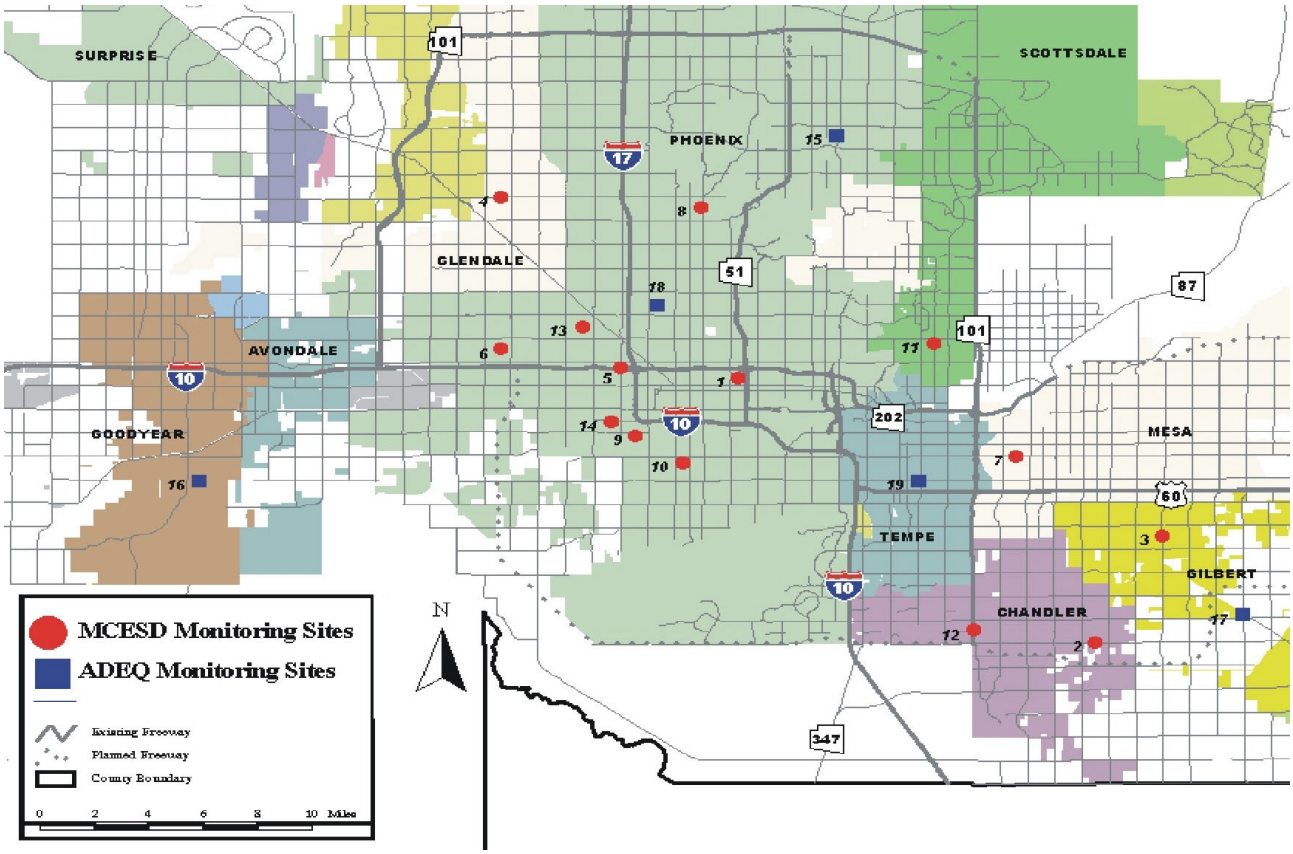
HOW PM_{10} IS MEASURED

Two national ambient air quality standards (NAAQS) for PM_{10} are designed to protect the public health: a 24-hour standard and an annual standard. Maricopa County currently violates both of these standards. In 2000, there were eight days on which the 24-hour standard was exceeded and seven monitors exceeded the annual standard. The MAG PM_{10} Serious Area Plan shows that Maricopa County will meet both of these standards by 2006 if control measures in the Plan are implemented. By far, the most effective control measure in the plan is the strengthening and increased enforcement of Maricopa County Rule 310.

Concentrations of PM_{10} in the ambient air are measured at monitoring stations located through the valley. Figure 3 illustrates the location of these monitors. The monitors measure PM_{10} concentrations for 24-hour periods every six days. These daily samples are averaged over a calendar year to calculate the average annual concentrations at each monitor.

On a construction site, PM_{10} is measured in terms of opacity readings. Rule 310 requires that dust generating operations must not produce fugitive dust exceeding 20 percent opacity. The opacity from sources of visible emissions is measured by an individual who has received certification as a qualified observer by completing Visible Emissions Evaluation Training, or "Smoke School." Additional information about Smoke School is contained in Chapter 4 of this guide.

Figure 3. PM_{10} Monitor Locations



3. DUST CONTROL MEASURES

VEHICLE USE

Open Areas and Vacant Lots

To control fugitive dust from open areas and vacant lots on which no activity is occurring, whether or not work is underway at other locations on the site, use one of the following methods:

- Apply water effectively to form a crusted surface
- Prevent motor vehicle and/or offroad vehicle trespassing, parking, and/or access, by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees, or other effective control measures.
- Uniformly apply and maintain surface gravel or soil stabilizers to all areas that have been disturbed by motor vehicles or off-road vehicles.
- Pave the area.
- Restore the area such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby undisturbed native conditions.

Unpaved Parking Lots

Unpaved parking lots are defined as any area larger than 5,000 square feet that is not paved and that is used for parking, maneuvering, or storing motor vehicles. These areas must be maintained using one of the options below:

- Apply and maintain surface gravel.
- Apply and maintain an effective dust suppressant.

Unpaved Haul and Access Roads

On a site that has unpaved surfaces used for vehicular traffic, vehicle speed must not exceed 15 mph and the number of trips using these surfaces must not exceed 20 per day unless one of the following work practices is used:

- Apply water so that the surface is visibly moist.
- Apply and maintain surface gravel.
- Apply and maintain a dust suppressant.

DISTURBED SURFACE AREAS

Before Earthmoving Operations

Use advance planning to minimize the likelihood of generating excessive fugitive dust. When earthmoving activities commence, use the following control measures:

- Water the work site to the planned depth of cuts.

—Midwest Industrial Supply Photo

- Proceed in stages to minimize the amount of disturbed surface area present at any given time.

During Earthmoving Operations

During dust generating operations such as land clearing, earthmoving, weed abatement by discing or blading, excavating, grading, demolition, or other construction activity, these control measures should be observed:

- Apply water or another dust suppressant to the work area.
- Construct fences or 3- to 5-foot high wind barriers adjacent to roadways or urban areas.

When the area under construction is one acre or larger, water must be applied during earthmoving operations as well as prior to commencement of operations. Note that the use of fences or wind barriers does not substitute for the use of water or other dust suppressant.

Temporary Stabilization After Earthmoving Operations

Dust generated from disturbed surface areas on which no activity is occurring, whether at a work site that is under construction or at a work site that is temporarily or permanently inactive, must be controlled by the following methods:

- Apply and maintain a dust suppressant.
- Prevent motor vehicle and/or offroad vehicle trespassing, parking, and/or access.

Permanent Stabilization

Disturbed surface areas on which no activity has occurred for eight months must be permanently stabilized whether or not the entire site is inactive. One of the following measures must be employed:

- Restore areas with vegetation and soil characteristics similar to adjacent or nearby undisturbed areas
- Pave, or apply gravel or dust suppressants
- Establish permanent vegetative ground cover

MATERIAL HAULING

Bulk material handling, storage and/or transporting operations are defined as the loading, unloading, conveying, transporting, piling, stacking, screening, grading, or the moving of bulk materials capable of producing fugitive dust. Advance planning and properly implemented control measures can control fugitive dust. The following practices should be used:

Onsite

When hauling bulk material on-site that involves crossing a public roadway which is open during construction:

- Load all haul trucks such that the freeboard is not less than three inches.
- Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgates.
- Control of trackout is required.

When hauling bulk material on-site, completely within site boundaries:

- Limit vehicular speeds to 15 mph.
- Apply water to the top of the load to prevent fugitive dust emissions that exceed the 20 percent opacity limit.

Offsite

When hauling bulk material offsite onto paved public roadways:

- Load all haul trucks such that the freeboard is not less than three inches.
- Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgates.
- Cover all haul trucks with a tarp or other suitable closure.
- Before the empty haul truck leaves the site, either clean the interior of the cargo compartment or cover it.
- Control of trackout is required.

SPILLAGE AND TRACKOUT

Trackout, including carryout and spillage, refers to bulk materials that adhere to the exterior surfaces of or are spilled from motor vehicles and/or equipment and subsequently fall onto a paved public roadway.

Control of trackout is required for all work sites with a disturbed surface area of five acres or more and from all work sites from which 100 cubic yards of bulk materials are hauled per day. Control of trackout can be accomplished using any of the control devices described and shown below:

Gravel Pad - A stabilized construction entrance, designed to remove mud and dirt from the tires of vehicles as they leave the construction site. The gravel pad should be at least 30 feet wide by 50 feet long, and a minimum of six inches deep. One to three-inch diameter, washed well-graded gravel or crushed rock should be used. The gravel pad should be properly graded.

Grizzly - A device using rails, pipes or grates to dislodge mud, dirt and debris from the tires and undercarriage of vehicles prior to leaving the work site. An example of a grizzly is the "shaker" invented by Jeff Lange for Kitchell Contracting. This device is reusable, transportable by pickup truck, easy to assemble, and can be expanded to accommodate various sizes of haul vehicles. More information about the shaker device can be obtained at www.trackoutcontrol.com.

Grizzlies are designed to cause vehicles driving across them to shake off mud, dirt, and other debris that would otherwise be carried from a construction site onto an adjoining roadway. **—Kitchell Contracting photo**

Paving - The paved surface must extend from the point of intersection with a paved public roadway at least 100 feet back onto the site and have a width of at least 20 feet.

In addition, cleanup of trackout must be done immediately, if it extends 50 linear feet or more onto the paved public road. Otherwise, the trackout must be cleaned up by the end of the workday. Cleanup may be performed with a street sweeper or wet broom or by manually sweeping up the deposits.

4. TRAINING AND CERTIFICATION

As part of the Blue Skies campaign, a Dust Control Training Course and Certification Program have been developed. The goal of the training course is to familiarize construction personnel with common dust control problems and solutions. The course is designed for anyone working in the construction field, and site superintendents, water truck and water pull drivers, and subcontractors are strongly encouraged to attend. In addition to lectures, the course includes class discussion and review of example case studies.

At the completion of the course, the attendee will have a basic understanding of why controlling construction dust is important, should be familiar with dust control regulations, and be able to identify and solve dust control problems at construction sites.

Modular Lesson Plan

This basic dust control course is designed to be presented in a half-day format. Prior to beginning Module 1, the class should be shown the 10-minute video developed by the Maricopa County Environmental Services Department, entitled "Effective Dust Control and Overview of Rule 310." The course can be tailored to the needs of specific groups or jurisdictions by eliminating modules or parts of modules. The six training modules are:

Module 1 - Background will cover the reasons that dust control is needed, and the causes of PM_{10}. Both natural and man-made sources of fugitive dust will be identified and actions that have already been taken to reduce PM_{10} emissions will be explained.

Module 2 - Construction Dust Control Requirements will explore in detail the construction dust control requirements in effect for the jurisdiction in which the course is being presented. Dust control measures for construction-related activities will be explained.

Module 3 - Enforcement of Dust Control at Construction Sites will cover jurisdictional enforcement, including the characteristics of the dust control enforcement program, inspection criteria, enforcement procedures, and penalties for violations, as appropriate for the jurisdiction in which the course is being presented.

Module 4 - Strategies to Assist Construction Activities in Controlling Dust will examine dust control strategies, including project design and site planning. A case study of a construction project will be included.

Module 5 – Visible Emissions Evaluation at Construction Sites will describe the techniques used to identify the opacity levels of dust generated by construction activities. The script and slides for this module are being developed by the Arizona Department of Environmental Quality (ADEQ).

Module 6 - Information Resources and Reinforcements will discuss additional information that supplements and reinforces the material covered in class. Participants will be given a final exam that can be used for certification purposes.

Voluntary Certification Program

The goal of the voluntary certification program is to train construction personnel and supervisors to identify dust problems and proactively implement measures to control dust at construction sites. This program is designed for construction industry management and job supervisory personnel. Upon certification, each individual will receive a Dust Control Specialist or Instructor certificate.

Two levels of certification are offered:

Certified Dust Control Specialist - An individual who completes Dust Control Training and passes an exam covering the subject matter presented in the course with a grade of 75 percent or better may receive designation as a Certified Dust Control Specialist. To maintain certification, a Specialist must take the Dust Control Training and pass the final exam once every two years.

Certified Dust Control Instructor – A Certified Dust Control Specialist who has successfully completed Visible Emissions Evaluation Training and has taught a Dust Control Training course under the supervision of another Certified Instructor, may be designated as a Certified Dust Control Instructor. To maintain certification, an Instructor must receive Smoke School certification every six months and pass the final exam for Dust Control Training (with a score of 75 percent or better) at least once a year.

Visible Emissions Evaluation Training (Smoke School) is offered by the ADEQ twice a year in various parts of the state. This training is a two-day event comprising a classroom session in the morning of the first day, followed by a testing session lasting the remainder of the event. During the testing session, participants evaluate sets of black and white smoke readings to learn to recognize levels of opacity that exceed the standards.

Additional information on the availability of training classes and requirements for certification may be obtained from the Blue Skies coordinator at (602) 712-7487.

5. EARTHMOVING PERMIT APPLICATION

GUIDANCE FOR FILLING OUT AN APPLICATION FOR AN EARTHMOVING PERMIT

Section 1 – Applicant Information

Submit the Appropriate Fee for your Earthmoving Permit application, according to the following:

- If total surface area disturbed is 0.1 acre to less than 1 acre, submit $75.
- If total surface area disturbed is 1 acre or more, submit $36/acre plus $110 per site

Make checks payable to "Maricopa County Environmental Services Department" or "M.C.E.S.D."

A Responsible Official is one of the following:

- For a corporation, a corporate officer or any other person who performs similar policy or decision making functions for the corporation, or a duly authorized representative of such person, if the representative is responsible for the earthmoving operations in the subject application. Delegation of authority to such representative shall be approved in advance by the permitting authority.
- For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
- For a municipality, state, federal, or other public agency, the principle executive officer or ranking elected official of that entity.

Section 2 – Project Information - Drawing

This section is self-explanatory. However, please remember, when calculating the amount of disturbed area for trenching, include the dimensions of the trench, stockpiling areas, and staging areas.

Section 3 – Dust Control Plan

An Earthmoving Permit must contain a Dust Control Plan. You may fill out Section 3 of the Application For An Earthmoving Permit and submit it as your Dust Control Plan or you may write your own Dust Control Plan describing all control measures to be used during the project and submit it as your Dust Control Plan.

Water: Sources of fugitive dust, listed in Section 3, that include "Apply water" as a control measure require specifics about water availability and water application. If you choose to apply water as a control measure, you must fill in the blanks, under both Water Availability and Water Application. For Water Availability, indicate which of the following will be utilized: water storage tank onsite; metered hydrant onsite; water not onsite (describe water source and state the distance from site to water source); water provided through irrigation; other (specify source). For Water Application, indicate which of the following will be utilized: apply water using a water truck (state number of trucks and number of gallons per truck); apply water using hoses; apply water using sprinklers.

Dust Suppressants: If you choose the control measure "dust suppressant(s) other than water", you must describe the method of dust suppressant(s) application. Express frequency in terms of how often the surface will receive a complete application of dust suppressant(s) (i.e., the frequency may be three applications per day). Express intensity in units such as gallons per minute. Also, include as an attachment:

- Product specifications or label instructions for approved usage.
- Information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application.

Describing Major Project Phases: You may use the Project Information Drawing in Section 2 to show the various project phases, along with a timeline depicting relative start and stop times. Indicate on the line provided for describing major project phases that you have shown the various project phases on the Project Information Drawing.

Bulk Material Handling And Hauling: Rule 310 defines "bulk material handling, storage, and/or transporting operation" as the use of equipment, haul trucks, and/or motor vehicles, such as but not limited to the loading, unloading, conveying, transporting, piling, stacking, screening, grading, or moving of bulk materials, which are capable of producing fugitive dust at an industrial, institutional, commercial, governmental, construction, and/or demolition site. When designing your Dust Control Plan, you must choose control measures for all bulk material handling and bulk material hauling that you will do onsite within the boundaries of the work site and that you will do offsite onto paved public roadways.

Open Storage Piles: The control measure options for open storage piles are included with bulk material handling control measure options, because an open storage pile is any accumulation (by stacking, loading, and unloading) of bulk material with a 5 percent or greater silt content that in any one point attains a height of three feet and covers a total surface area of 150 square feet or more. If you choose to construct wind barriers around open storage piles, as a control measure, you must construct the wind barriers around three sides of the open storage pile. The sides' length must be no less than equal to the length of the pile; the sides' distance from the pile must be no more than twice the height of the pile; the sides' height must be equal to the pile

height, and the material of which the sides are made must be no more than 50% porous.

Spillage, Carry-Out, Erosion, And/Or Trackout: Rule 310, Subsection 308.3(b) requires spillage, carryout, erosion, and/or trackout to be cleaned up at least at the end of the work day, immediately if it extends more than 50 feet along a paved public roadway. You must specify, on the Dust Control Plan for any site that exits onto a paved public road, the control measures that you will use for both immediate cleanup and after-the-work-day cleanup.

Weed Abatement By Discing Or Blading: Watering, both prior to and during weed abatement by discing or blading, has been predesignated as the primary control measure, since both are required by Rule 310, Subsection 308.8. You must choose a contingency control measure and at least one control measure to be implemented following weed abatement by discing or blading.

Vegetative Ground Cover: If you choose to "Establish vegetative ground cover" as a control measure, you must comply with the standards in Rule 310, Subsection 302.3:

- Maintain a flat vegetative cover (i.e., attached (rooted) vegetation or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind) that is equal to at least 50 percent; or
- Maintain a standing vegetative cover (i.e., vegetation that is attached (rooted) with a predominant vertical orientation) that is equal to or greater than 30%; or
- Maintain a standing vegetative cover (i.e., vegetation that is attached (rooted) with a predominant vertical orientation) that is equal to or greater than 10% and where the threshold friction velocity is equal to or greater than 43 cm/second when corrected for non-erodible elements; or
- Maintain a percent cover that is equal to or greater than 10% for non-erodible elements.

Surface Gravel, Recycled Asphalt, Or Other Suitable Material: If you choose to "apply and maintain surface gravel, recycled asphalt, or other suitable material" as a control measure for unpaved haul/access roads, you must comply with the standards in Rule 310, Subsection 302.2:

- Do not allow visible dust emissions to exceed 20 percent opacity and either do not allow silt loading to be equal to or greater than 0.33 oz/ft^2 or do not allow silt content to exceed 6 percent.

If you choose to "Apply and maintain surface gravel, recycled asphalt, or other suitable material" as a control measure for unpaved parking lots, you must comply with the standards in Rule 310, Subsection 302.1:

Do not allow visible fugitive dust emissions to exceed 20 percent opacity and either do not allow silt loading to be equal to or greater than 0.33 oz/ft^2 or do not allow silt content to exceed 8 percent.

An approved Application for an Earthmoving Permit is reproduced on the following pages.

Maricopa County
Environmental Services Department
Air Quality Division

1001 North Central Avenue
Phoenix, AZ 85004
(602) 506-6700 FAX (602) 506-6862

PLEASE SUBMIT IN TRIPLICATE

Application for an Earthmoving Permit

In order for Maricopa County to process an application for an Earthmoving Permit, all questions must be answered and the appropriate fee must be submitted.

FOR OFFICE USE ONLY
Dist # _____
NOV # _____
Permit # _____
Date Issued _____
Fee Paid_____
Approved By _____
PU _____ Mail _____

Section 1 – Applicant Information

1. Applicant Must Be One Of The Following.
Check All That Apply:
Property Owner____Developer____General/Prime Contractor____Lessee_____

2. Legal Business Name: _____
Applicant Address: _____
City/State/Zip: _____
Phone: _____ Fax #: _____
E-Mail Address: _____

3. Property Owner/Developer, If Not Applicant: _____
Address: _____
Phone: _____ Fax #: _____
Contact Person: _____

4. Primary Project Contact: _____
Title: _____ Company Name: _____
Pager #: _____ Mobile #: _____ On-Site #: _____

5. Signature of a Responsible Official of the Applicant:
I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the Application For An Earthmoving Permit, including Section 1-Applicant Information, Section 2-Project Information-Drawing, and Section 3-Dust Control Plan, are true, accurate, and complete.

A Responsible Official of the Applicant is the person who will be contacted or named in any enforcement action initiated by the Maricopa County Environmental Services Department or the Office of the Maricopa County Attorney.

Signature:_____
Printed Name:_____ Title:_____

Section 2 – Project Information-Drawing

6. **Type Of Project. Check All That Apply.**
   Residential_____ Commercial/Industrial_____ Road Work_____ Temporary Storage/Yard_____
   Trenching_____ Site Preparation/Land Development_____ Weed Control_____ Demolition_____

7. **Project Street Address: _____City:_____**

8. **Nearest Major Intersection: _____**

9. **Legal Description (From Phoenix Metropolitan Map Book):**
   Township: _____ Range:_____ Section: _____

10. **Size Of Area, In Acres, That Will Be Disturbed During The Duration Of This Permit, Including Staging And Stockpile Areas**: _____

11. **Project Start Date:_____**

12. **Does The Project Include Renovation Or Demolition Activities? Yes _____No _____**
    Renovation Or Demolition Activities: All facilities scheduled for renovation or demolition must be inspected by a certified Asbestos Hazard Emergency Response Act (AHERA) accredited asbestos building inspector. You must keep a copy of any reports of inspections, including laboratory test results of samples collected, for 2 years.

    NESHAP stands for national emission standards for hazardous air pollutants. National emission standards for hazardous air pollutants are described in 40 Code Of Federal Regulations (CFR) Part 61 and Part 63 (1998). If your facility is scheduled for renovation or demolition and is subject to the requirements of these Federal regulations, you must attach, to your Application For An Earthmoving Permt, a copy of the 10-day NESHAP notification.

    Is Asbestos Present? _____

    AHERA Determination Made By: _____ Date:_____

    10-Day NESHAP Notification Submittal Date (Attach Copy Of 10-Day NESHAP Notification): _____
    Renovation Or Demolition Start Date: _____

An Earthmoving Permit will not be issued, unless a drawing is submitted. Attach a separate page (at least 8 ½" x 11") with a drawing showing all of the following elements:

- Entire project site boundaries
- Acres to be disturbed with linear dimensions
- Nearest public roads
- North arrow
- Planned exit locations onto paved public roadways

Section 3 – Dust Control Plan

- Put a check (□) in the box in front of all the following sources of fugitive dust that you anticipate from your project.
- Write the letters "NA" in the box in front of all the following sources of fugitive dust that you do not anticipate implementing during your project.
- Unless already pre-designated, write the letter "P", for primary control measures that you will implement during your project, on the line in front of at least one of the listed control measures or work practices, under each checked box/source of fugitive dust. The control measures pre-designated with the letter "P" are required to be implemented.
- Write the letter "C", for contingency control measures that you will implement during your project, on the line in front of at least one of the listed control measures or work practices, under each checked box/source of fugitive dust.

❑ Unpaved Haul/Access Roads:

❑ Limit vehicle speed to 15 miles per hour or less and limit vehicular trips to no more than 20 per day. If this is chosen as the primary control measure, indicate number of vehicles traveled on haul roads: _____

❑ Apply water at a frequency and intensity to comply with Subsection 302.2 in Rule 310 (See Guidance-"Water") Water Availability: _____
Water Application: _____

❑ Pave

❑ Apply and maintain surface gravel, recycled asphalt, or other suitable material so that the area meets the silt loading and silt content limits of Subsection 302.2 in Rule 310 (See Guidance-"Surface Gravel, Recycled Asphalt, Or Other SuitableMaterial")

❑ Apply and maintain dust suppressant(s) other than water using _____ at a frequency of_____ and an intensity of _____ (See Guidance-"Dust Suppressants")

❑ Other: _____

❑ Disturbed Surface Areas – Before Dust Generating Operations Occur:

❑ Pre-water site to the depth of cuts (See Guidance-"Water")
Water Availability:_____
Water Application: _____

❑ Phase work to reduce the amount of disturbed surface area at any one time. Describe major project phases (See Guidance-"Describing Major Project Phases")
_____

❑ Other: _____

❑ Disturbed Surface Areas – During Dust Generating Operations:

❑ Apply water (See Guidance-"Water")
Water Availability:_____
Water Application: _____

❑ Apply and maintain dust suppressant(s) other than water using _____ at a frequency of _____ and an intensity of _____ (See Guidance-"Dust Suppressants")

❑ Construct fences or 3 foot - 5 foot high wind barriers with 50% or less porosity (in combination with one of the above) Show locations on drawing in Section 2.

❑ Cease operations (as a contingency control measure only)

❑ Other: _____

❑ Disturbed Surface Areas – Temporary Stabilization Including Weekends, After Work Hours, Holidays, And Periods Up-To 8 Months:

- ❑ Apply water (See Guidance-"Water") or other dust suppressant (See Guidance-"Dust Suppressants") in sufficient quantity and frequency to establish and maintain a visible crust.
  Water Availability:_____
  Water Application: _____
- ❑ Establish vegetative ground cover that complies with Subsection 302.3 in Rule 310 (See Guidance-"Vegetative Ground Cover")
  Describe vegetative ground cover:_____
- ❑ Restrict vehicular access in combination with one of the above
- ❑ Other: _____

❑ Disturbed Surface Areas – Permanent Stabilization Required Within 8 Months Of Ceasing Dust Generating Operations:

- ❑ Restore area such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby undisturbed native conditions
- ❑ Establish vegetative ground cover that complies with Subsection 302.3 in Rule 310 (See Guidance-"Vegetative Ground Cover")
  Describe vegetative ground cover:_____
- ❑ Pave or apply gravel
- ❑ Apply and maintain dust suppressant(s) other than water using _____ at a frequency of_____ and intensity of_____ (See Guidance-"Dust Suppressants")
- ❑ Other: _____

❑ Trackout From Work Sites With 5 Acres Or More Of Disturbed Surface Area Or With 100 Cubic Yards Or More Of Bulk Material Hauled On Or Off Site Per Day:

- ❑ Install a grizzly or wheel wash system at all access points
- **P** At all access points, install a gravel pad at least 30 feet wide, 50 feet long, and 6 inches deep
- ❑ Pave starting from the point of intersection with a paved public roadway and extending for a centerline distance of at least 100 feet and a width of at least 20 feet
- ❑ Other: _____

❑ Spillage, Carry-Out, Erosion, And/Or Trackout:

If Extending More Than 50 Feet Along A Paved Public Roadway, Implement IMMEDIATELY:

- ❑ Operate a street sweeper or wet broom with sufficient water, if applicable, at the speed recommended by the manufacturer
- ❑ Manually sweep-up deposits
- ❑ Other (describe in detail):_____

If Extending Less Than 50 Feet Along A Paved Public Roadway, Implement NO LATER THAN THE END OF THE WORK DAY:

- ❑ Operate a street sweeper or wet broom with sufficient water, if applicable, at the speed recommended by the manufacturer
- ❑ Manually sweep-up deposits
- ❑ Other (describe in detail):_____

❑ Vehicle Use In Open Areas:

- ❑ Restrict trespass by installing signs
- ❑ Install physical barriers such as curbs, fences, gates, posts, signs, shrubs or trees to prevent access
- ❑ Other: _____

❑ Unpaved Parking Lots:

- ❑ Apply water at a frequency and intensity to comply with Subsection 302.1 in Rule 310 (See Guidance-"Water")
  Water Availability:_____
  Water Application: _____
- ❑ Apply and maintain gravel, recycled asphalt, or other suitable material such that the area meets the silt loading and silt content limits of Subsection 302.1 in Rule 310 (See Guidance-"Surface Gravel, Recycled Asphalt, Or Other Suitable Material")
- ❑ Pave
- ❑ Apply and maintain dust suppressant(s) other than water using _____ at a frequency of _____ and an intensity of _____ (See Guidance-"Dust Suppressants")
- ❑ Other: _____

❑ Bulk Material Handling And Open Storage Piles:

(Choose Primary Control Measure And Secondary Control Measure For Each Of The Following 2 Situations):

During Stacking, Loading, And Unloading Operations:

- ❑ Apply water at a frequency and intensity so as not to exceed 20% opacity (See Guidance-"Water")
  Water Availability:_____
  Water Application: _____
- ❑ Other (describe in detail):_____

When Not Conducting Stacking, Loading, And Unloading Operations:

- ❑ Cover open storage piles with tarps, plastic, or other material
- ❑ Apply water to maintain a soil moisture content at a minimum of 12% or 70% of the optimum moisture content for compaction (See Guidance-"Water")
  Water Availability:_____
  Water Application: _____
- ❑ Apply water as needed to establish and maintain a visible crust (See Guidance-"Water")
  Water Availability:_____
  Water Application: _____
- ❑ Maintain a threshold friction velocity of at least 100 cm/sec
- ❑ Maintain vegetative cover meeting one of the requirements of Subsection 302.3 in Rule 310 (See Guidance-"VegetativeGround Cover")
- ❑ Construct wind barriers (See Guidance-"Open Storage Piles"). This control measure must be used in combination with at least one of the above control measures, except covering.
- ❑ Other: _____

❑ Bulk Material Hauling On-Site Within The Boundaries Of The Work Site:

P Load all haul trucks such that the freeboard is not less than 3 inches; and
Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgates; and
Install a trackout control device that removes particulate matter from tires and the exterior surfaces of haul trucks and/or motor vehicles that traverse the work site

❑ Limit vehicular speeds to 15 miles per hour or less while traveling on the work site

❑ Apply water to the top of the load (See Guidance-"Water")
Water Availability:_____
Water Application: _____

❑ Cover haul trucks with a tarp or other suitable closure

❑ Other: _____

❑ Bulk Material Hauling Off-Site Onto Paved Public Roadways:

P Cover haul trucks with a tarp or other suitable closure; and
Load all haul trucks such that the freeboard is not less than 3 inches; and
Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate(s); and
Before the empty haul truck leaves the site, clean the interior of the cargo compartment or cover the cargo compartment

❑ Other: _____

❑ Earthmoving Operations On Disturbed Surface Areas 1 Acre Or Larger:

❑ Apply water, while conducting earthmoving operations (See Guidance-"Water")
Water Availability:_____
Water Application: _____

❑ Other: _____

❑ Weed Abatement By Discing Or Blading:

P Pre-water site and apply water, while weed abatement by discing or blading is occurring (See Guidance-"Water")
Water Availability:_____
Water Application: _____

❑ Other: _____

Choose At Least One of The Following, As A Primary Control Measure, To Be Implemented Following Weed Abatement By Discing Or Blading:

❑ Pave

❑ Apply gravel to establish and maintain either a threshold friction velocity of at least 100 cm/sec or a cover of at least 10% non-erodible elements

❑ Apply water (See Guidance-"Water") or other dust suppressant (See Guidance-"Dust Suppressants") to establish and maintain a visible crust
Water Availability:_____
Water Application: _____

❑ Establish vegetative ground cover meeting one of the requirements of Subsection 302.3 of Rule 310 (See Guidance-"Vegetative Ground Cover")

❑ Other: _____

6. SAMPLE DAILY RECORDKEEPING LOG FOR RULE 310

Project Name:_____**Project Location:**_____**Date:**_____

Maricopa County's Rule 310 (Fugitive Dust Sources) requires that you keep a daily log – recording the actual implementation of control measures identified in your Dust Control Plan.

Each time you visually check an area for dust control measure implementation, write the time in the shaded boxes at the top of the log and write a "Y", "N" or "NA" in all of the boxes below your recorded time.

Use the "Comments" column to record other pertinent information. For example, document the opacity of the fugitive dust or describe the corrective actions taken, such as placement of gravel for road cover or trackout control.

Time (indicate a.m. or p.m.)

1. Before Dust Generating Operations Occur

A. Pre-watering to depth of cuts?									**Comments**
B. Pre-watering stockpiled material?									
C. Work phased/Disturbance minimized?									
D. Water truck being operated?									
E. Water truck being filled?									
F. Other (specify in Comments column)									

2. During Dust Generating Operations

A. Is visible dust present?									**Comments**
B. Applying water?									
C. Applying dust suppressant(s) other than water?									
D. Fences or 3' – 5' high wind barriers with 50% porosity intact?									
E. Shut down operations?									
F. Checked control measures before leaving the work site for the day?									
G. Other (specify in Comments column)									

3. Unpaved Haul/Access Roads

A. Is visible dust present?									**Comments**
B. Observed less than 20 vehicles travelling less than 15 miles per hour?									
C. Is road visibly moist?									
D. Is road covered with gravel, recycled asphalt, or other suitable material?									
E. Applying dust suppressant(s) other than water?									
F. Other (specify in Comments column)									

4. Loading, Unloading, And Storage Piles

A. Is visible dust present?									**Comments**
B. Pre-watering material?									
C. Water being applied during loading and unloading?									
D. Other (specify in Comments column)									

5. Trackout/Access Points

A. Is trackout control device intact?									**Comments**
B. Cleaned up trackout?									
C. Other (specify in Comments column)									

6. Temporary Site Stabilization

A. Applying water?									**Comments**
B. Applying dust suppressant(s) other than water?									
C. Other (specify in Comments column)									

Total Number Of Gallons Applied:_____**Responsible Person's Signature And Title:**_____

7. SOURCES OF ADDITIONAL INFORMATION

BLUE SKIES CAMPAIGN COORDINATOR

The Arizona Blue Skies Campaign coordinator can be reached at (602) 712-7487. The Campaign Coordinator responds to inquiries from members of the construction industry and others concerning the availability of Dust control courses and Smoke School sessions, and disseminates information regarding dust control training and certification.

Certified Dust Control Trainers who have completed the Blue Skies training and certification program may obtain copies of toolkits and instructional materials for use in conducting additional dust control classes from the coordinator.

The campaign coordinator also has dust control resources available for use by schools and by volunteer organizations including copies of this Guide, program brochures, and videos.

BLUE SKIES WEB SITE

Be sure to visit our campaign Web site at [INSERT WEB ADDRESS]. The Web site contains updated information about dust control, including documents that can be downloaded and reproduced. Training materials may also be ordered online.

OTHER SOURCES OF INFORMATION

Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC, 20460.
http://www.epa.gov/

Arizona Department of Environmental Quality

Phoenix Main Office
3033 N. Central Ave.
Phoenix, AZ 85012
(602) 207-2300
Toll Free in Arizona:
(800) 234-5677

Northern Regional Office
1515 E. Cedar Ave., Suite F
Flagstaff, AZ 86004
(928) 779-0313

Southern Regional Office
400 W. Congress, Suite 433
Tucson, AZ 85701
(520) 628-6733

Maricopa County Environmental Services Department

602-506-6623

http://www.maricopa.gov/envsvc/Default.asp

Dust Devil Academy

http://www.maricopa.gov/sbeap/basepage.htm

DUST CONTROL BY THE CONSTRUCTION INDUSTRY

Blue Skies

CAMPAIGN

ARIZONA

www.azblueskies.org